

Appln No.: 09/682,723
Amendment Dated: September 22, 2003
Reply to Office Action of March 20, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original) A method for preparing an end-capped polycarbonate resin, comprising the step of processing a mixture comprising a polycarbonate having free hydroxyl-end groups and an end-capping reagent in a melt transesterification reaction to produce a polycarbonate resin, wherein the end-capping reagent comprises a mixture of:

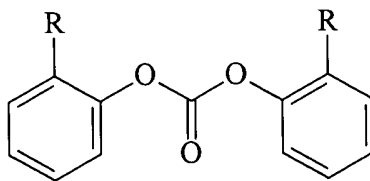
- (a) at least one species of a symmetrical activated aromatic carbonate, and
- (b) at least one species of an optionally-substituted phenol, whereby said end-capping reagent reacts with at least some of the free hydroxyl end-groups of the polycarbonate to produce an end-capped polycarbonate resin.

2. (original) The method of claim 1, wherein the end-capping reagent contains the symmetrical activated aromatic carbonate and the optionally-substituted phenol in a mole ratio of from 10:90 to 90:10.

3. (original) The method of claim 2, wherein the end-capping reagent is added in an amount such that the mole ratio of total carbonate in the end-capping reagent to free-hydroxyl end groups is from 0.5 to 3.

4. (original) The method of claim 1, wherein the end-capping reagent is added in an amount such that the mole ratio of total carbonate in the end-capping reagent to free-hydroxyl end groups is from 0.5 to 3.

5. (original) The method of claim 1, wherein the end-capping reagent comprises as a symmetrical activated aromatic carbonate a compound of the formula:



wherein R is an electronegative substituent.

6. (original) The method of claim 5, wherein the electronegative substituent R is selected from among nitro groups, halo groups, and carbonyl-containing groups.

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7. (original) The method of claim 6, wherein the electronegative substituents R are selected from among methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, phenylcarbonyl, phenoxy carbonyl, and benzyloxycarbonyl.

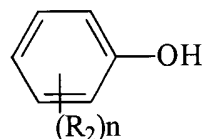
8. (original) The method of claim 7, wherein the electronegative substituent R is methoxycarbonyl.

9. (original) The method of claim 6, wherein the end-capping reagent contains the symmetrical activated aromatic carbonate and the optionally-substituted phenol in a mole ratio of from 10:90 to 90:10.

10. (original) The method of claim 9, wherein the end-capping reagent is added in an amount such that the mole ratio of total carbonate in the end-capping reagent to free-hydroxyl end groups is from 0.5 to 3.

11. (original) The method of claim 6, wherein the end-capping reagent is added in an amount such that the mole ratio of total carbonate in the end-capping reagent to free-hydroxyl end groups is from 0.5 to 3.

12. (original) The method of claim 5, wherein the optionally-substituted phenol is a compound of the general formula:



wherein the substituents R_2 may be the same or different and are selected from among H, C_1-C_{36} alkyl, C_1-C_{36} alkoxy, C_6-C_{36} aryl, C_6-C_{36} aryloxy, C_7-C_{36} arylalkyl, or C_7-C_{36} arylalkoxy and n is an integer between 1 and 5.

13. (original) The method of claim 12, wherein the wherein the end-capping reagent comprises as a optionally-substituted phenol a compound selected from among phenol, p-cumylphenol, 4-*tert*-butylphenol, octylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

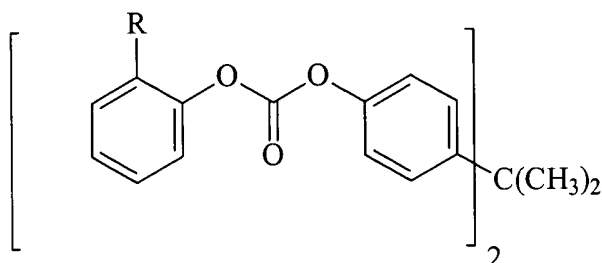
14. (original) The method of claim 12, wherein the wherein the end-capping reagent comprises as a optionally-substituted phenol a compound selected from among 4-*tert*-butylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

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15. (original) The method of claim 1, wherein the end-capping reagent comprises as a symmetrical activated aromatic carbonate a compound of the formula:



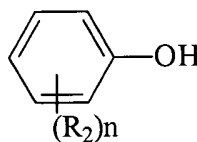
wherein R is an electronegative substituent.

16. (original) The method of claim 15, wherein the electronegative substituents R are selected from among nitro groups, halo groups, and carbonyl-containing groups.

17. (original) The method of claim 16, wherein the end-capping reagent contains the symmetrical activated aromatic carbonate and optionally-substituted phenol in a mole ratio of from 10:90 to 90:10.

18. (original) The method of claim 17, wherein the end-capping reagent is added in an amount such that the mole ratio of total carbonate in the end-capping reagent to free-hydroxyl end groups is from 0.5 to 3.

19. (original) The method of claim 15, wherein the optionally-substituted phenol is a compound of the general formula:



wherein the substituents R₂ may be the same or different and are selected from among H, C₁-C₃₆ alkyl, C₁-C₃₆ alkoxy, C₆-C₃₆ aryl, C₆-C₃₆ aryloxy, C₇-C₃₆ arylalkyl, or C₇-C₃₆ arylalkoxy and n is an integer between 1 and 5.

20. (original) The method of claim 19, wherein the wherein the end-capping reagent comprises as a optionally substituted phenol a compound selected from among phenol, p-cumylphenol, 4-*tert*-butylphenol, octylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

21. (original) The method of claim 19, wherein the wherein the end-capping reagent comprises

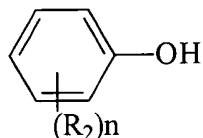
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as a optionally substituted phenol a compound selected from among 4-*tert*-butylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

22. (original) The method of claim 1, wherein the optionally-substituted phenol is a compound of the general formula:



wherein the substituents R_2 may be the same or different and are selected from among H, C_1-C_{36} alkyl, C_1-C_{36} alkoxy, C_6-C_{36} aryl, C_6-C_{36} aryloxy, C_7-C_{36} arylalkyl, or C_7-C_{36} arylalkoxy and n is an integer between 1 and 5.

23. (original) The method of claim 22, wherein the wherein the end-capping reagent comprises as a optionally substituted phenol a compound selected from among phenol, p-cumylphenol, 4-*tert*-butylphenol, octylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

24. (original) The method of claim 22, wherein the wherein the end-capping reagent comprises as a optionally substituted phenol a compound selected from among 4-*tert*-butylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

25. (original) The method according to claim 1, wherein the end-capping reagent is added to the polycarbonate in a reactor system of the continuous or semi-continuous type.

26. (original) The method according to claim 25, wherein the reactor system consists of two or more reactors in series.

27. (original) The method according to claim 25, wherein the end-capping reagent is added to the polycarbonate using a static mixer.

28. (original) The method according to claim 1, wherein the formed polycarbonate has a content of phenols having electron-withdrawing ortho-substituents generated in the end-capping reaction of 500 ppm or below.

29. (original) The method according to claim 1, wherein the formed polycarbonate has a content of phenols having electron-withdrawing ortho-substituents generated in the end-capping reaction of 100 ppm or below.

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30. (original) The method according to claim 1, wherein the formed polycarbonate has a content of end-capping reagent of 500 ppm or below.

31. (original) The method according to claim 1, wherein the formed polycarbonate has a content of end-capping reagent of 100 ppm or below.

32. (original) The method according to claim 1, wherein the formed polycarbonate has a content of terminal 2-(alkoxycarbonyl)phenyl, 2-(phenoxycarbonyl)phenyl, 2-(benzyloxycarbonyl)phenyl, and 2-benzoylphenyl groups of 5,000 ppm or below.

33. (original) The method according to claim 1, wherein the formed polycarbonate has a content of terminal 2-(methoxycarbonyl)phenyl groups of 2,500 ppm or below.

34. (original) The method according to claim 1, wherein the formed polycarbonate has a content of terminal 2-(methoxycarbonyl)phenyl groups of 1,000 ppm or below.

35. (original) The method according to claim 1, wherein the formed polycarbonate has a content of terminal alkylphenyl groups of about 0.25 mole % or more.

36. (original) The method according to claim 1, wherein the formed polycarbonate has a content of terminal alkylphenyl groups of about 0.5 mole % or more.

37. (original) The method according to claim 1, wherein the formed polycarbonate has a glass transition temperature of about 125 to 150 °C.

38. (original) The method according to claim 1, wherein the formed polycarbonate has a melt viscosity equal to or less than a phenyl-capped melt polycarbonate of similar number average molecular weight and polydispersity.

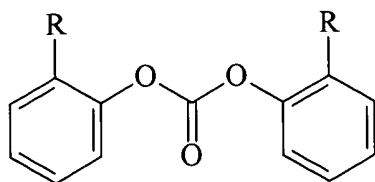
39. (original) An end-capping reagent consisting essentially of a mixture of:
 (a) one or more species of symmetrical activated aromatic carbonate, and
 (b) one or more species of an optionally substituted phenol, optionally in solvent, and optionally including a basic transesterification catalyst.

40. (original) The reagent of claim 39, wherein the end-capping reagent includes as a symmetrical activated aromatic carbonate a compound of the formula:

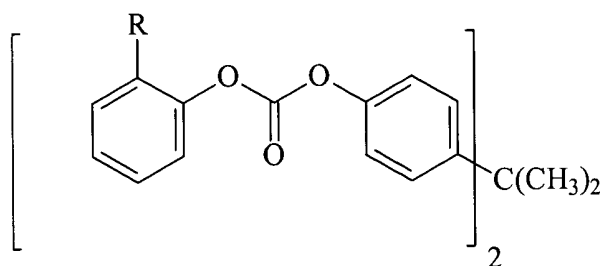
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or

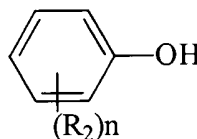


wherein R is an electronegative substituent.

41. (original) The reagent of claim 40, wherein the electronegative substituents R are selected from among nitro groups, halo groups, and carbonyl-containing groups.

42. (original) The reagent of claim 41, wherein the electronegative substituents R are selected from among methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, phenylcarbonyl, phenoxycarbonyl, and benzyloxycarbonyl.

43. (original) The reagent of claim 42, wherein the optionally-substituted phenol is a compound of the general formula:



wherein the substituents R_2 may be the same or different and are selected from among H, C_1 - C_{36} alkyl, C_1 - C_{36} alkoxy, C_6 - C_{36} aryl, C_6 - C_{36} aryloxy, C_7 - C_{36} arylalkyl, or C_7 - C_{36} arylalkoxy and n is an integer between 1 and 5.

44. (original) The reagent of claim 43, wherein the end-capping reagent comprises as an optionally substituted phenol a compound selected from among phenol, p-cumylphenol, 4-*tert*-butylphenol, octylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

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45. (original) The reagent of claim 41, wherein the electronegative substituent R is methoxycarbonyl.

46. (currently amended) The [method] reagent of claim 45, wherein the end-capping reagent comprises as an optionally substituted phenol a compound selected from among 4-tert-butylphenol, nonylphenol, dodecylphenol, 3-pentadecylphenol, and octadecylphenol.

47. (original) The reagent of claim 41, wherein the end-capping reagent contains the activated aromatic carbonates and optionally substituted phenol in a mole ratio of from 10:90 to 90:10.